

ABSTRACT OF THE DISCLOSURE

5 The present invention provides a non-aqueous electrolyte secondary battery comprising a positive electrode, a negative electrode comprising a carbonaceous material, an organic electrolyte comprising a lithium salt and a solvent, and a separator. The solvent comprises ethylene carbonate (EC), propylene carbonate (PC), a chain carbonate and phenylethylene carbonate, the content of the chain carbonate, ethylene carbonate (EC) and the propylene carbonate (PC) are from 50 to 90 vol%, from 5 to 45 vol% and from 5 to 45 vol%, respectively, based on the total volume of the ethylene carbonate (EC), the propylene carbonate and the chain carbonate, and the content of the phenylethylene carbonate is from 0.1 to 5.0 wt% based on the total weight of the electrolyte. The non-aqueous electrolyte secondary battery according to the invention exhibits a great discharge capacity, an excellent cycle life performance and an excellent low-temperature discharge performance.